

WHAT IS CLAIMED IS:

1. A magnetic signal transmission line comprising a substrate having a main surface, and a plurality of single-magnetization domains arranged in a one-dimensional array on said main surface, each of said single-magnetization domains having a magnetization, whereby a signal is transferred along said one-dimensional array by a change of said magnetization.

2. The magnetic signal transmission line as defined in claim 1, wherein said single-magnetization domain is formed in a magnetic material having a spontaneous magnetization.

3. The magnetic signal transmission line as defined in claim 2, wherein said magnetic material is a ferromagnetic substance.

4. The magnetic signal transmission line as defined in claim 1, wherein an interactive energy acting between dipoles in adjacent two of said single-magnetization domains in terms of the absolute temperature is larger than an operational ambient temperature.

5. The magnetic signal transmission line as defined in claim 1, wherein each of said single-magnetization domains has an easy axis which is parallel to said main surface.

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6. The magnetic signal transmission line as defined in claim 5, wherein said easy axis is parallel to a direction of said one-dimensional array.

7. The magnetic signal transmission line as defined in claim 5, wherein said easy axis is perpendicular to a direction of said one-dimensional array.

8. The magnetic signal transmission line as defined in claim 1, wherein each of said single-magnetization domains has a height smaller than both a width and a length thereof.

9. The magnetic signal transmission line as defined in claim 1, wherein each of said single-magnetization domains has a width equal to or larger than a length thereof.

10. The magnetic signal transmission line as defined in claim 1, wherein each of said single-magnetization domains is separated from an adjacent one of said single-magnetization domains with a space disposed therebetween.

11. The magnetic signal transmission line as defined in claim 1, wherein each of said single-magnetization domains is distributed as a part of a continuous unit of the magnetic signal transmission line.

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12. The magnetic signal transmission line as defined in claim 1, wherein said single-magnetization domains are arranged periodically in said one-dimensional array.

13. The magnetic signal transmission line as defined in claim 1, wherein each of said single-magnetization domains has an anisotropic energy which resides between zero and 120% of interactive energy acting between dipoles in adjacent two of said single-magnetization domains.

14. A method for transmitting a signal by using a one-dimensional array of a plurality of single-magnetization domains, said method comprising the steps of applying a magnetic field to at least one of the single-magnetization domains to cause a change of magnetization therein, and detecting a magnetization of another of said single-magnetization domains.

15. The method as defined in claim 14, wherein said change of magnetization includes a change of direction of a spontaneous magnetization.

16. The method as defined in claim 14, wherein said change of magnetization is transferred as a solitary wave.

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